



12th Standard

CHEMISTRY

SECOND REVISION

TEST-2023

**Various District
Question Paper Collection**

SECTION - I

Note: 1) Answer all the questions. 2) Choose the most suitable answer from the given four alternatives and write the option code and the corresponding answer.

15 X 1 = 15

1. In the electrolytic refining of copper, which one of the following is used as anode?
a) Pure copper b) Impure copper c) Carbon rod d) Platinum electrode
2. In diborane, the number of electrons that accounts for banana bonds is
a) six b) four c) two d) three
3. Among the following, which is the strongest oxidising agent?
a) Cl_2 b) F_2 c) Br_2 d) I_2
4. Which of the following oxidation states is most common among the lanthanoids?
a) 4 b) 2 c) 5 d) 3
5. How many geometrical isomers are possible for $[\text{Pt}(\text{Py})(\text{NH}_3)(\text{Br})(\text{Cl})]$?
a) 3 b) 4 c) 0 d) 15
6. The number of octahedral void(s) per atom present in a cubic close packed structure is
a) 3 b) 2 c) 1 d) 4
7. The unit of rate constant for a first order reaction is
a) $\text{mol L}^{-1}\text{s}^{-1}$ b) $\text{Lmol}^{-1}\text{s}^{-1}$ c) $\text{L}^2\text{mol}^{-2}\text{s}^{-1}$ d) s^{-1}
8. The aqueous solutions of sodium formate, anilinium chloride and potassium cyanide are respectively
a) acidic, acidic, basic b) basic, acidic, basic c) basic, neutral, basic d) none of these
9. Among the following cells
I) Leclanche cell II) Nickel - cadmium cell
III) Lead storage battery IV) Mercury cell
Primary cells are
a) I and IV b) I and III c) III and IV d) II and III
10. Which one of the following statement is not correct.
a) The value of equilibrium constant is changed in the presence of a catalyst in the reaction at equilibrium
b) Enzymes catalyse mainly biochemical reactions.
c) Coenzymes increase the catalytic activity of enzyme.
d) Catalyst does not initiate any reaction.
11. **Assertion:** Phenol is more reactive than benzene towards electrophilic substitution reaction.
Reason: In the case of phenol, the intermediate arenium ion is more stabilized by resonance.
a) if both assertion and reason are true and reason is correct explanation of assertion.
b) if both assertion and reason are true but reason is not the correct explanation of assertion.
c) assertion is true but reason is false d) both assertion and reason are false.
12. Which one of the following reduces tollens reagent
a) formic acid b) acetic acid c) benzophenone d) none of these
13. When aniline reacts with acetic anhydride the product formed is
a) o - aminoacetophenone b) m - aminoacetophenone
c) p - aminoacetophenone d) acetanilide
14. On hydrolysis of starch, we finally get
a) glucose b) fructose c) both (a) and (b) d) sucrose
15. Nylon is an example of
a) polyamide b) polythene c) polyester d) polysaccharide



COMMON SECOND REVISION TEST – 2023

Standard XII

Reg.No.:

--	--	--	--	--

CHEMISTRY

Time: 3.00 hrs.

Part - I

Marks: 70

15 × 1 = 15

I. Choose the correct answer:

- The Half Life period of a first order reaction is 5 minutes, the time required for 99.9% completion is nearly equal to
a) 99.9 minutes b) 49.95 minutes c) 50 minutes d) 10 minutes
- What is the pH of the resulting solution when equal volumes of 0.1 NaOH and 0.01 HCl are mixed?
a) 2.0 b) 3 c) 7.0 d) 12.65
- Among the following cells
I) Leclanche cell II) Nickel-Cadmium cell
III) Lead Storage battery IV) Mercury cell
Primary cells are
a) I & IV b) I & III c) III & IV d) II & III
- Among the following which one is example for 'Sol' type colloid
a) Fog b) Froth c) Milk d) Paint
- Which of the following oxidises Glycerol into Meso oxalic acid?
a) con HNO_3 b) $\text{Bi}(\text{NO}_3)_3$ c) $\text{Br}_2/\text{H}_2\text{O}$ d) HIO_4
- Which one of the following reduces tollens' reagent?
a) formic acid b) acetic acid c) benzoic acid d) picric acid
- Which of the following amines does not undergo acetylation?
a) t-butylamine b) ethylamine
c) diethylamine d) triethylamine
- Vitamin B7 is also known as
a) biotin b) pyridoxine c) folic acid d) thiamine
- The mixture of chloroxylenol and terpenicol is used as
a) antiseptic b) antipyretic c) antibiotic d) analgesics
- The incorrect statement among the following is
a) Nickel is refined by Mond's process
b) Titanium is refined by Van Arkel's process
c) Zinc blende is concentrated by froth flotation
d) In the metallurgy of gold, the metal is leached with dilute NaCl solution.
- Duralumin is an alloy of
a) Cu, Mn b) Cu, Al, Mg c) Al, Mn d) Al, Cu, Mn, Mg
- The number of bond pair and lone pair present in AX_3 type interhalogen compound
a) 1,3 b) 3,2 c) 5,1 d) 7,0
- Permanganate ion changes to _____ in acidic medium.
a) MnO_4^{2-} b) Mn^{2+} c) Mn^{3+} d) MnO_2
- A magnetic moment of 1.73 BM will be shown by one among the following
a) TiCl_4 b) $[\text{CoCl}_6]^{4-}$ c) $[\text{Cu}(\text{NH}_3)_4]^{2+}$ d) $[\text{Ni}(\text{CN})_4]^{2-}$
- The vacant space in fcc lattice unit cell is
a) 48% b) 23% c) 32% d) 26%

Part - II

II. Answer any 6 questions. (Q.No.24 is compulsory)

6 × 2 = 12

- What are the limitations of Ellingham diagram?
- What happens when PCl_5 is heated?

- 18 Write down the central metal ion and ligand present in coordination complex $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
- 19 Give two examples for zero order reaction.
- 20 Give any two differences between Lewis acid and Lewis base.
- 21 Explain Tyndall effect.
- 22 Draw the molecular structure of Aspirin molecule
- 23 Write down the equation for Hofman's degradation.
- 24 An organic compound (A) having molecular formula $\text{C}_3\text{H}_6\text{O}$ is heated with Zinc amalgam and hydrochloric acid produces compound (B) having molecular formula C_3H_8 . Identify A and B.

Part - III**III. Answer any 6 questions. (Q.No.33 is compulsory)**

6 × 3 = 18

25. Differentiate Double salt and Coordination complex
26. How will you identify borate radical?
27. What are the consequences of Lanthanide contraction?
28. Write down the Bragg's equation and explain it.
29. Define Corrosion? How do you prevent corrosion?
30. Write down three characteristics of catalyst.
31. How do you prepare Terylene? Mention its use.
32. Draw the structures of cellulose and sucrose.
33. An organic compound (A) - $\text{C}_3\text{H}_8\text{O}_3$ used as a sweetening agent, which on oxidation with Fenton's reagent gives a mixture of compounds B and C. identify A, B and C. Write possible reactions.

Part - IV**IV. Answer all the questions.**

5 × 5 = 25

34. a) Explain the principle of electrolytic refining of metals with silver as an example. [5]
- (OR)
- b) i) Give the balanced equations for the reaction between chlorine with cold NaOH and hot NaOH [3]
- ii) Write down any two uses of silicones. [2]
35. a) i) Explain Linkage isomerism with an example. [3]
- ii) Write a short notes on "Chromyl chloride" experiment. [2] (OR)
- b) Explain briefly about Scottky and Frenkel defects? [5]
36. a) i) Write down the differences between order and molecularity. [3]
- ii) Write the expressions for the solubility products of Hg_2Cl_2 and $\text{Ca}_3(\text{PO}_4)_2$? [3]
- (OR)
- b) i) State Faraday's first law of electrolysis? [2]
- ii) A copper electrode is dipped in 0.1 M copper sulphate solution at 25°C. Calculate the electrode potential of copper. [Given $E^\circ_{\text{Cu}^{2+}/\text{Cu}} = 0.34 \text{ V}$]
37. a) Describe intermediate compound theory of catalysis. [5] (OR)
- b) i) How will you convert the following? [3]
- 1) phenol → benzene 2) phenol → aniline
- ii) Write any two uses of anisole. [2]
38. a) i) Explain Popoff's law. [2]
- ii) Write a short notes on Gombery reaction and "Levine and Hauser" acetylation. [3] (OR)
- b) i) How carbohydrates are classified. [3]
- ii) Write a short notes on HVZ reaction.
- *****

12 R

Time : 3.00 hrs

17.2.23

Tiruppur district
Second Revision Test - 2023

+2 CHEMISTRYReg No. **Marks : 70****PART - I****15 x 1 = 15**

Answer all the questions. Choose the correct answer out of the following choices.

- Which of the following oxidation states is most common among the lanthanoids?
a) +2 b) +3 c) +4 d) +5
- After 3 hours 1 kg of a radio active substance is disintegrated leaving behind 62.5 g of the substance then its half life period is.....
a) 30 minutes b) 45 minutes c) 60 minutes d) 120 minutes
- H_2PO_4^- is the conjugate base of a) PO_4^{3-} b) P_2O_5 c) H_3PO_4 d) HPO_4^{2-}
- Natural rubber has a) alternate cis-and trans-configuration b) random cis - and trans - configuration c) all cis- configuration d) all trans- configuration
- Which of the following is not likely to act as the base? a) BF_3 b) PF_3 c) CO d) F^-
- Hair cream is a) gel b) emulsion c) solid SOI d) sol
- Which kind of isomerism is possible for a complex $[\text{CO}(\text{NH}_3)_4 \text{Br}_2]\text{Cl}$? a) geometrical and ionization b) geometrical and optical c) optical and ionization d) geometrical only
- Which of the following observations from Ellingham diagram is not correct?
i) Oxygen gas is consumed during the formation of metal oxides which results in the increase in randomness ii) The graph for the formation of carbon monoxide is a straight line with negative slope. iii) As temperature decreases, generally ΔG value for the formation of metal oxide becomes less negative and becomes zero at a particular temperature iv) Due to phase transition there is a sudden change in the slope at a particular temperature for some metal oxides like MgO , HgO a) (i) & (ii) b) (i) & (iii) c) (i) & (iv) d) (iii) & (iv)
- A solid (A) reacts with strong aqueous NaOH liberating a foul smelling gas (B) which spontaneously burn in air giving smoky rings. (A) and (B) are respectively.
a) P_4 (white) and H_2S b) P_4 (red) and PH_3 c) S_8 and H_2S d) P_4 (white) and PH_3
- Which of the following electrolytic solution has the least specific conductance?
a) 0.2 N b) 0.2 N c) 0.002 N d) 2N
- The correct ascending order of basic strength for alkyl substituted amines in aqueous solution is a) $\text{R}_2\text{NH} > \text{RNH}_2 > \text{R}_3\text{N} > \text{NH}_3$ b) $\text{NH}_3 > \text{R}_3\text{N} > \text{RNH}_2 > \text{R}_2\text{NH}$ c) $\text{NH}_3 < \text{R}_3\text{N} < \text{RNH}_2 < \text{R}_2\text{NH}$ d) $\text{R}_2\text{NH} < \text{RNH}_2 < \text{R}_3\text{N} < \text{NH}_3$
- One mole of an organic compound (A) with the formula $\text{C}_3\text{H}_8\text{O}$ reacts completely with two moles of HI to form X and Y. When Y is boiled with aqueous alkali it forms Z, Z answers the iodoform test. The compound (A) is a) propan-2-ol b) propan-1-ol c) ethoxyethane d) methoxyethane
- Assertion (A) : Diamond is a hard polar molecular solid
Reason (R) : In diamond atoms are bound together in a three dimensional network entirely by covalent bonds. a) Both (A) & (R) are correct and (R) is the correct explanation of (A) b) Both (A) & (R) are correct but (R) is not the correct explanation of (A) c) (A) is correct but (R) is wrong d) (A) is wrong but (R) is correct
- If one strand of the DNA has the sequence 'ATGCTTGA' then the sequence of complementary strand would be a) TCCGAAC b) TACGAAC c) TACGRAGT d) TACGTACT
- The stability of +1 oxidation state decreases in the sequence
a) $\text{Al} < \text{Ga} < \text{In} < \text{Tl}$ b) $\text{In} < \text{Tl} < \text{Ga} < \text{Al}$ c) $\text{Tl} > \text{In} > \text{Ga} > \text{Al}$ d) $\text{Ga} > \text{In} > \text{Al} > \text{Tl}$

PART - II

Answer any 6 questions. Q.No. 24 is compulsory.

6 x 2 = 12

- Which type of ores can be concentrated by froth floatation method? Give two examples for

such ores.

17. What are Zeolites? Give their general formula.
18. Which is more stable Fe^{3+} (or) Fe^{2+} . Explain.
19. Write any four differences between crystalline solids and amorphous solids.
20. Write Arrhenius equation and explain the terms involved.
21. State Kohlraush law.
22. Suggest a suitable reagent to prepare a secondary alcohol with identical group using grignard reagent. Write the equation.
23. How do antiseptics differ from disinfectants?
24. Define equivalent conductance.

PART - III

Answer any 6 questions. Q.N.33 is compulsory.

6 x 3 = 18

25. Describe a method for refining nickel.
26. Complete the following reactions : i) $\text{NaCl} + \text{MnO}_2 + \text{H}_2\text{SO}_4 \rightarrow$ ii) $\text{Mg} + \text{HNO}_3 \rightarrow$ iii) $\text{XeF}_6 + \text{H}_2\text{O} \rightarrow$
27. Write the formula for the following coordination compounds.
i) Potassium hexacyanido ferrate (II) ii) Penta ammine nitrito - K - N-Cobalt (III) ion
iii) Sodium tetra fluorido di hydroxido chromate (III)
28. What is an elementary reaction? Give the differences between order and molecularity of a reaction.
29. Derive Henderson - Hasselbalch equation.
30. Explain intermediate compound formation theory of catalysis with an example.
31. How is phenol prepared from (i) chloro benzene (ii) isopropyl benzene
32. Give the differences between primary and secondary structure of proteins.
33. An organic compound (A) $\text{C}_3\text{H}_9\text{N}$ when treated with nitrous acid, gave an alcohol (B) and N_2 gas. (A) undergoes carbylamine reaction to give (C) which on reduction gave isopropyl methylamine. Identify the compound (A), (B), (C) and write the equations.

PART - IV

Answer all the questions.

5 x 5 = 25

34. a) i) Describe the role of cryolite in the extraction of aluminium and sodium cyanide in froth floatation. (2) (ii) What is inorganic benzene? How it is prepared? (3) (OR)
b) i) Give the uses of helium. (2) ii) Compare lanthanides and actinides. (3)
35. a) i) On the basis of VB theory explain the nature of bonding in $[\text{Co}(\text{C}_2\text{O}_4)_3]^{3-}$ (3)
ii) Write a short note on π -back bonding in metal carbonyls. (2) (OR)
b) (i) Calculate the percentage efficiency of packing in case of body centred cubic crystal. (3)
(ii) Write the rate law for the following reactions
a) A reaction that is $3/2$ order in X and zero order in Y. b) A reaction that is second order in NO and first order in Br_2 . (2)
36. a) i) Define pH. Calculate the pH of 0.04 M HNO_3 solution. (3)
ii) Write any two tests to identify the two types of emulsion (2) (OR)
b) Write a note on i) Galvanic cell notation of Daniel cell (ii) Mercury button cell (2 + 3)
37. a) i) Arrange the following in the increasing order of their boiling point and give a reason for your ordering. Butan-2-ol, Butan-1-ol, 2-methyl propan-2-ol (2)
ii) Explain the mechanism of aldol condensation. (3) (OR)
b) i) Amines are more basic than amides. Why? (2)
ii) Write the equation for the following reactions. (3) a) Hofmann's Bromamide reaction
b) Diazotisation c) Gomberg reaction
38. a) (i) How is Cinnamic acid prepared? (2) ii) How are hormones classified? (3) (OR)
b) Explain the mechanism of cleansing action of soaps. (5)



Standard 12

CHEMISTRY

Time Allowed: 3.00 Hours

Maximum Marks: 70

PART - A

Choose the best answer:

15×1=15

- Electrochemical process is used to extract
 - Iron
 - Lead
 - Sodium
 - Silver
- In boric acid, $[\text{BO}_3]^{-3}$ units are linked by
 - Ionic bond
 - Coordination bond
 - Hydrogen bond
 - All the above
- On hydrolysis, PCl_3 gives
 - H_3PO_3
 - PH_3
 - H_3PO_4
 - POCl_3
- Which of the following has half filled electronic configuration?
 - Fe^{+2}
 - Fe^{+3}
 - Mn^{+3}
 - Mn^{+4}
- Fac-Mer isomerism is shown by
 - $[\text{CO}(\text{en})_3]^{+3}$
 - $[\text{CO}(\text{NH}_3)_4\text{Cl}_2]^+$
 - $[\text{CO}(\text{NH}_3)_3\text{Cl}_3]$
 - $[\text{CO}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$
- SiO_2 is an example for
 - ionic crystal
 - covalent crystal
 - molecular crystal
 - metallic crystal
- The addition of a catalyst during a chemical reaction alters which of the following quantities?
 - Enthalpy
 - Activation energy
 - Entropy
 - Internal energy
- Equal volumes of three acid solutions of pH 1, 2 and 3 are mixed in a vessel. What will be the H^+ ion concentration in the mixture?
 - 3.7×10^{-2}
 - 10^{-6}
 - 0.111
 - None of these
- Faraday constant is defined as
 - charge carried by 1 electron
 - charge carried by 1 mole of electrons
 - charge required to deposit 1 mole of substance
 - charge carried by 6.22×10^{10} electrons
- Which of the following acts as a catalyst in the hydrolysis of ethyl acetate?
 - $\text{C}_2\text{H}_5\text{OH}$
 - CH_3COOH
 - H_2O
 - $\text{C}_2\text{H}_5\text{OOCCH}_3$
- Isopropyl benzene on air oxidation in the presence of dilute acid gives
 - $\text{C}_6\text{H}_5\text{COOH}$
 - $\text{C}_6\text{H}_5\text{COCH}_3$
 - $\text{C}_6\text{H}_5\text{COC}_6\text{H}_5$
 - $\text{C}_6\text{H}_5\text{-OH}$
- Which one of the following undergoes haloform reaction?
 - Formaldehyde
 - Benzaldehyde
 - Benzophenone
 - Acetaldehyde
- The product formed by the reaction an aldehyde with a primary amine
 - Carboxylic acid
 - Aromatic acid
 - Schiff's base
 - Ketone
- _____ is called a reducing sugar.
 - Glucose
 - Fructose
 - Both a and b
 - Sucrose
- Nylon is an example of
 - Polyamide
 - Polythene
 - Polyester
 - Polysaccharide

PART - B

Answer any SIX questions. Q.No. 20 is compulsory:

6×2=12

- Give the limitations of Ellingham diagram.
- Mention the uses of alum.

V12C

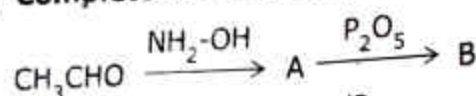
- 18) What is coordination number?
- 19) Define Unit cell.
- 20) Write the expression for the solubility product of Hg_2Cl_2 .
- 21) How can you prepare a colloid by double decomposition method?
- 22) What happens when phenol reacts with nitrous acid?
- 23) How will you identify the primary amine?
- 24) How are vitamins classified?

PART - C

Answer any SIX questions. Q.No. 32 is compulsory:

6×3=18

- 25) How is phosphine prepared in the laboratory?
- 26) Write about chromylchloride test.
- 27) What is crystal field stabilisation energy?
- 28) State Faraday's Laws of electrolysis.
- 29) Give the differences between order and molecularity of a reaction.
- 30) Write a note on nano catalysis.
- 31) What happens when benzaldehyde reacts with ammonia?
- 32) Complete the following reaction:



- 33) How is Terylene prepared?

PART - D

Answer ALL the questions:

5×5=25

- 34) a) Write a note on (i) Froth floatation process (ii) Fullerene.

(OR)

- b) i) What happens when chlorine reacts with excess ammonia?
- ii) How will you prepare bleaching powder?

- 35) a) Compare lanthanides and actinides.

(OR)

- b) Discuss briefly the nature of bonding in metal carbonyls.

- 36) a) i) Explain metal excess defect.

- ii) Write Arrhenius equation and explain the terms involved.

(OR)

- b) Derive an expression for the hydrolysis constant and degree of hydrolysis of salt of strong acid and weak base.

- 37) a) i) Write about Galvanic cell notation.

- ii) Define Gold number. (OR)

- b) How can you convert?

- i) Ethane - 1, 2 - diol \rightarrow Ethanal

- ii) But-2-ene \rightarrow Ethanal

- 38) a) i) What is tautomerism? Explain with an example.

- ii) What are antiseptics?

(OR)

- b) Discuss about the structure of glucose.



30-01-2023

Standard 12

Time Allowed: 3.00 Hours

CHEMISTRY

Maximum Marks: 70

PART - I

- I. Note: i) Answer all the questions. 15×1=15
 ii) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.

- Which of the following reduction is not thermo dynamically feasible?
 a) $\text{Cr}_2\text{O}_3 + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Cr}$
 b) $3\text{TiO}_2 + 4\text{Al} \rightarrow 2\text{Al}_2\text{O}_3 + 3\text{Ti}$
 c) $\text{Al}_2\text{O}_3 + 2\text{Cr} \rightarrow \text{Cr}_2\text{O}_3 + 2\text{Al}$
 d) None of these
- Producer gas is _____
 a) $\text{H}_2 + \text{CO}$
 b) $\text{CO} + \text{N}_2$
 c) $\text{H}_2\text{O} + \text{CO}$
 d) None of these
- Match it:

A) Hyponitrous acid	-	i) +7
B) Pernitrous acid	-	ii) +1
C) Pernitric acid	-	iii) +2
D) Hydronitrous acid	-	iv) +5

a) (ii)	(iv)	(iii)	(i)
b) (iv)	(ii)	(i)	(iii)
c) (iv)	(i)	(ii)	(iii)
d) (ii)	(iv)	(i)	(iii)
- Which of the following lanthanoid ions is diamagnetic?
 a) Eu^{2+}
 b) Yb^{2+}
 c) Ce^{2+}
 d) Sm^{2+}
- A magnetic moment of 1.73 BM will be shown by one among the following.
 a) TiCl_4
 b) $[\text{CoCl}_6]^{4-}$
 c) $[\text{Cu}(\text{NH}_3)_4]^{2+}$
 d) $[\text{Ni}(\text{CN})_4]^{2-}$
- The vacant space in bcc lattice unit cell is _____
 a) 48%
 b) 23%
 c) 32%
 d) 26%
- For a first order reaction, the rate constant is 6.909 min^{-1} . The time taken for 75% conversion in minutes is _____
 a) $\left(\frac{3}{2}\right) \log 2$
 b) $\left(\frac{2}{3}\right) \log 2$
 c) $\left(\frac{3}{2}\right) \log \left(\frac{3}{4}\right)$
 d) $\left(\frac{2}{3}\right) \log \left(\frac{4}{3}\right)$
- H_2PO_4^- is the conjugate base of _____
 a) PO_4^{3-}
 b) P_2O_5
 c) H_3PO_4
 d) HPO_4^{2-}
- The cell emf value for mercury button cell is _____
 a) 1.5V
 b) 1.35V
 c) 1.8V
 d) 2V
- Which one of the following is correctly matched?
 a) emulsion - smoke
 b) gel - butter
 c) foam - mist
 d) whipped cream - sol
- Glycerol on oxidation with _____ gives formaldehyde and formic acid.
 a) Conc. HNO_3
 b) $\text{Br}_2/\text{H}_2\text{O}$
 c) HIO_4
 d) KMnO_4
- In which of following reaction new carbon-carbon bond is not formed?
 a) Aldol condensation
 b) Friedal craft reaction
 c) Kolbe's reaction
 d) Wolf - Kishner reduction
- $\text{C}_6\text{H}_5\text{N}_2\text{Cl} + \text{C}_6\text{H}_5\text{NH}_2 \xrightarrow[\text{pH (4-5)}]{273-278 \text{ K}} ?$
 a) p - hydroxy azobenzene
 b) p - amino azobenzene
 c) p - hydroxy phenyl hydrazine
 d) 2 - phenyl azo 4 - methyl phenol
- Which of the following vitamin deficiency causes muscular dystrophy?
 a) Vitamin K
 b) Vitamin E
 c) Vitamin A
 d) Vitamin B
- Which of the following is not a bio-degradable polymer?
 a) PHB
 b) PGA
 c) PCL
 d) HDPE

PART - II

- II. Answer ANY SIX questions. Question No. 20 is compulsory: 6×2=12
- Explain the following terms with suitable examples.
 (i) Gangue (ii) Slag
 - What are the uses of phosphine?
 - Write the electronic configuration of Ce^{4+} and CO^{2+} .

Tsi12C

- 19) Classify the following ligand based on the number of donor atoms.
 a) NH_3 b) en c) Ox^{2-} d) Pyridine
- 20) The activation energy of a reaction is $22.5 \text{ Kcal mol}^{-1}$ and the value of rate constant at 40°C is $1.8 \times 10^{-6} \text{ s}^{-1}$. Calculate the frequency factor A.
- 21) What is HVZ reaction?
- 22) Complete the following reaction:
 i) $\text{C}_2\text{H}_5\text{NH}_2 + \text{HNO}_2 \longrightarrow$ ii) $\text{C}_6\text{H}_5\text{NH}_2 + \text{HNO}_2 \xrightarrow{273\text{K} - 278\text{K}}$
- 23) What is the selective reduction of polynitro compounds?
- 24) What are fat-soluble vitamins?

PART - III

III. Answer ANY SIX questions. Question No. 30 is compulsory:

6×3=18

- 25) Give short note on Calcination.
- 26) What is the hybridisation of Iodine in IF_7 ? Give its structure.
- 27) What are the uses of coordination complexes in medical field?
- 28) Calculate the packing efficiency of face - centered cubic lattice (fcc).
- 29) What are elementary reaction? Give the differences between order and molecularity of a reaction.
- 30) Calculate the concentration of OH^- ion in a fruit juice, which contains $2 \times 10^{-3} \text{ M H}_3\text{O}^+$ ion. Identify the nature of the solution.
- 31) Differentiate Vanderwaals adsorption and activated adsorption.
- 32) How will you differentiate 3 types of alcohols by catalytic hydrogenation reaction?
- 33) How will you conduct the following changes?
 a) Acetone \rightarrow Diacetone amine
 b) Formaldehyde \rightarrow Hexamethylene tetramine
 c) Benzaldehyde \rightarrow Hydro benzamide

PART - IV

IV. Answer ALL the questions:

5×5=25

- 34) a) What is Autoreduction?
 b) Explain the zone refining process.
 (OR)
 c) Complete the following reactions:
 (i) $\text{Zn} + \text{HCl} \rightarrow$ (ii) $\text{SiO}_2 + 4\text{HF} \rightarrow$ (iii) $\text{Xe} + \text{F}_2 \xrightarrow[400^\circ\text{C}]{\text{Ni}}$
 (iv) $\text{HCOOH} + \text{Conc. H}_2\text{SO}_4 \rightarrow$ (v) $\text{Cu} + 4\text{HNO}_3 \rightarrow$
- 35) a) How Cl_2 is prepared by Deacon's process?
 b) Which is more basic $\text{La}(\text{OH})_3$ and $\text{Lu}(\text{OH})_3$? Why?
 (OR)
 c) What is Linkage isomerism? Explain with an example.
 d) What is crystal field stabilization energy? (CFSE)
- 36) a) Give short note on Schottky defect.
 b) An atom crystallises in fcc crystal lattice and has a density of 10 g cm^{-3} with cell edge length of 100 pm. Calculate the number of atoms present in 1g of crystal.
 (OR)
 c) Derive integrated rate law for a zero order reaction $\text{A} \rightarrow \text{product}$.
 d) The rate constant of a reaction at 400K and 200K are 0.04 and 0.02 s^{-1} respectively. Calculate the value of activation energy.
- 37) a) Derive the Nernst equation.
 b) A solution of Silver nitrate is electrolysed for 20 minutes with a current of 2 amperes. Calculate the mass of silver deposited at all cathode.
 (OR)
 c) Describe some features of catalysis by Zeolites.
 d) Write short note on catalytic poison.
- 38) a) A dibromo derivative (A) on treatment with KCN followed by acid hydrolysis and heating gives a monobasic acid (B) along with liberation of CO_2 . (B) on heating with liquid NH_3 followed by treating with Br_2/KOH gives (C) which on treating with NaNO_2 and HCl at low temperature followed by oxidation gives a monobasic acid (D) having molecular mass 74. Identify (A) to (D).
 b) Classify the following as linear, branched or cross - linked polymers.
 (i) Bakelite (ii) Nylon - 6, 6 (iii) LDPE (iv) HDPE
 (OR)
 c) Write the zwitter ion structure of alanine.